Indian Minerals Yearbook 2018

(Part- II :Metals and Alloys)

57th Edition

IRON & STEEL AND SCRAP

(FINAL RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

Indira Bhavan, Civil Lines,
NAGPUR – 440 001

PHONE/FAX NO. (0712) 2565471
PBX : (0712) 2562649, 2560544, 2560648
E-MAIL : cme@ibm.gov.in
Website: www.ibm.gov.in

November, 2019

9 Iron & Steel and Scrap

Iron & steel is decidedly the vital component of a country's economy and is considered amongst the driving force of modernisation. The level of per capita consumption of steel is treated as one of the important indicators of socio-economic development and living standards in any country. Steel continues to be the foremost of engineering materials, which is not only environment-friendly but also is recyclable.

The finished steel production in India has grown from a mere 1.1 million tonnes in 1951 to 104.98 million tonnes in 2017-18. The contribution of non-alloy steel segment stood at 94.78 million tonnes, while the rest was contributed by alloy steel. The growth in the Steel Sector in the early decades after independence was mainly in the Public Sector units. However, following the adoption of new economic policy and subsequent deregulation and decontrol of Indian Iron & Steel Sector, the 1990s witnessed accelerated growth in the Private Sector, catapulting its share of steel production from 45% in 1992-93 to 85.32% in 2017-18.

Steel exports from India began in 1964. Exports in the first five years were mainly as a result of low demand in the domestic Iron and Steel market. Exports subsequently declined due to revival of domestic demand. India once again started exporting steel in 1975 which subsequently registered a slump due to rising domestic demand. Post liberalisation, a rejuvenation in the Steel Sector resulted in large-scale exports of iron and steel. In 2017-18, India's finished steel exports & imports were at 9.62 & 7.48 million tonnes, respectively. Though the country's production of iron & steel is sufficient to meet the domestic demand, it imports mainly finished/semi-finished steel and iron & steel (scrap) to meet specific requirements and supply of essential grades.

Liberalisation of the Indian Steel Sector

The Government's new economic policies have opened up opportunities for expansion of the Steel Industry. With a view to accelerating growth in the Steel Sector, the Government since 1991 has been initiating and implementing a number of policy measures. These measures have impacted the Indian Steel Sector positively in terms of modernisation and growth.

NATIONAL STEEL POLICY

The New National Steel Policy-2017 has been approved on 03.05.2017 and some of the Highlights of the National Steel Policy 2017 are enumerated below:

1. The Indian steel sector has grown rapidly over the past few years and presently it is the third largest steel producer globally, contributing to about 2% of the country’s GDP. India has also crossed 100 million tonnes mark for production for sale in 2016-17.

2. The New Steel Policy, 2017 aspires to achieve 300MT of steel making capacity by 2030. This would translate into additional investment of `10 lakh crore by 2030-31.

3. The Policy seeks to increase consumption of steel and the major segments that could influence the consumption are Infrastructure, Automobiles and Housing. New Steel Policy seeks to increase per capita steel consumption to the level of 160 kg by 2030.

4. Potential of MSME Steel Sector has been recognised. Policy stipulates encouragement and adoption of energy efficient technologies in the MSME Steel Sector to improve the overall productivity and reduce energy intensity.

5. Steel Ministry will facilitate R&D in the Sector through the establishment of Steel Research and Technology Mission of India (SRTMI). The initiative aimed to spearhead R&D of national importance in Iron & Steel Sector utilising tripartite synergy amongst Industry, national R&D laboratories and academic institutions.

6. Ministry through policy measures will ensure availability of raw materials like iron ore, coking coal and non-coking coal, natural gas etc. at competitive rates.

7. With the roll out of the National Steel Policy-2017, it is envisaged that the Industry will be steered in creating an environment for promoting domestic steel and thereby ensuring a scenario where production meets the anticipated pace of growth in consumption, through a technologically advanced and globally competitive Steel Industry. This will be facilitated by Ministry of Steel, in coordination with relevant Ministries, as may be required.

The principal objectives that the National Steel Policy 2017 aims to achieve are the following:

a) Build a globally competitive industry with a crude steel capacity of 300 MT by 2030-31.
b) Increase per Capita Steel Consumption to 160 kg by 2030-31.
c) To domestically meet entire demand of high-grade automotive steel, electrical steel, special steels and alloys for strategic applications by 2030-31.
d) Increase domestic availability of washed coking coal so as to reduce import dependence on coking coal to 50% by 2030-31.
e) To be net exporter of steel by 2025-26.
f) Encourage industry to be a world leader on energy and raw material efficient steel production by 2030-31, in a safe and sustainable manner.
g) Develop and implement quality standards for domestic steel products.

Expected impact/outcome of NSP 2017

(a) India to be world leader in energy efficiency and sustainability.

(b) Cost-effective and quality steel destination.

(c) Attain global standards in Industrial Safety & Health.

(d) Substantially reduce the carbon foot-print of the industry.

(e) Domestically meet the entire demand of high grade.

STRUCTURE AND ROLE OF INDIAN STEEL INDUSTRY

India is currently the 3rd largest producer of crude steel in the world. Earlier, as per the Notifications released by Ministry of Steel dated 12.12.2013 and 24.04.2015, a steel plant had been classified on the basis of process route/ technology adopted and on the basis of size/ capacity. The classification was Primary steel producers, Integrated steel producers, Secondary steel producers and Other steel producers. Subsequently, the guidelines for classification have been revised vide Notification dated 12.05.2016, and as per the latest classification, steel producers with their registered office addresses will be listed plant-wise & location-wise in accordance with the crude steel production capacity. The earlier classification along with process route adopted for iron/steel making as 'Integrated steel plants', 'Primary steel producers' 'Secondary steel producers', 'Main producers', 'Major producers' and 'Others' stands to be withdrawn as per the latest notification.

In 2017-18, the production of pig iron was 9.92 million tonnes and the percentage share of Private Sector (excluding SAIL) was about 97%.

In the year 2017-18, the production of sponge iron was 28.51 million tonnes. The production of crude steel was 102.34 million tonnes and finished steel was 104.98 million tonnes.

The Secondary Steel Sector constitutes Electric Arc Furnace/Induction Furnace, pig iron/ sponge iron units, re-rolling units, HR units, CR units, galvanised/colour coated units, tin plate units, wire-drawing units, etc. for producing either semi-finished or finished steel.

The important iron & steel units in India are Steel Authority of India, Rashtriya Ispat Nigam, Tata Steel, Essar Steel, JSW Steel and Jindal Steel & Power as well as large number of Mini Steel Plants based on Electric Furnaces & Energy Optimising Furnaces (EOF). Besides the steel producing units, there are a large number of Sponge Iron Plants, Mini Blast Furnace units, Hot & Cold Rolling Mills & Galvanising/Colour Coating units which are spread across the country.

The structure of the Indian Steel Industry in 2017-18 is furnished in Table-1. Production of iron & steel, crude steel, pig iron and finished steel for sale (alloy/ non-alloy) by SAIL, TSL, RINL, ESL, JSWL, JSPL and other producers along with production of crude steel from oxygen route, electric arc furnance route and induction furnance route during the year 2013-14 to 2017-18 has been reflected in Table-2 along with the production of sponge iron through gas-based & coal-based units during the year 2013-14 to 2017-18. The production of iron & Steel by Public and Private Sectors during 2013-14 to 2017-18 is furnished in Table-3. The details on plant-wise capacity and production of hot metal and crude/liquid steel are listed out in Table-4. Table-5 elucidates the production of crude/liquid steel by BOF and EAF/ IF routes. Prices of steel are provided in Table-6.

Table – 1 : Structure of the Indian Steel Industry, 2017-18

(Capacity/Production: In million tonnes)

Sector	Total Annual capacity	Production	
		2016-17	2017-18 (P)
Crude Steel			
SAIL, TSL, RINL, ESL, JSWL, JSPL	72.919	55.49	59.41
Other Producers	57.16	42.45	42.92
Public Sector	23.82	18.46	19.75
Private Sector	106.26	79.48	82.58
Pig iron/ Hot Metal*	NA	9.39	9.41
Sponge Iron	49.62	28.76	30.51
Non-Flat Products*	NA	49.81	51.89
Flat Products*	NA	51.98	53.09
Total finished snteel (Non-alloy)*	NA	93.35	94.78
Total finished steel (Alloy/Stainless)*	NA	8.45	10.20
Total finished steel (Alloy+Non alloy)*	NA	101.80	104.98

** Production for Sale*

Source: *JPC Bulletin on Iron & Steel, April, 2018*

Table – 2 : Production of Iron and Steel, 2013-14 to 2017-18

(In '000 tonnes)

Item/producers	2013-14	2014-15	2015-16	2016-17	2017-18
I. Pig Iron : Total*	**7950**	**9694**	**9227**	**10342**	**9924**
SAIL, TSL, RINL, ESL, JSWL, JSPL	552	920	1186	905	696
Other Producers	7398	8774	8041	9437	9228
II. Sponge Iron : Total*	**22872**	**24243**	**22427**	**28762**	**30511**
Gas Based	2683	2354	2440	4854	6458
Coal Based	20189	21889	19987	23908	24053
III. Crude Steel : Total	**81694**	**88979**	**89790**	**97936**	**102338**
Integrated steel Plants	**44241**	**46083**	**47421**	**55486**	
Oxygen route	35067	36610	36174	39711	30882$
EAF Units	9174	9473	11247	15775	12652$
Other Producers	**37453**	**42896**	**42369**	**42450**	
Oxygen route	455	961	2221	2291	1747$
EAF Units (including ores & MBF/EOF)	9419	13652	13352	13187	10229$
Induction Furnaces	27579	28283	26796	26972	20132$
IV. Finished Steel for Sale (Alloy steel/ Non-alloy) : Total	**87675**	**92157**	**90980**	**101805**	**104978**
SAIL, TSL, RINL, ESL, JSWL, JSPL	45160	46820	48527	57697	62492
Other Producers	50417	53862	54376	58213	55404
Less: Inter Plant Transfer/Own Consumption	7902	8525	11923	14105	12918

Figures rounded off
** Gross production including production for sale*
$ Production from April, 18 to December, 18
Source: *Ministry of Steel, Annual Report, 2018-19 and JPC Bulletin on Iron & Steel, April, 2018 and Annual Statistics, 2017-18*

Table – 3 : Production of Iron and Steel, 2013-14 to 2017-18 (By Sectors)

(In '000 tonnes)

Item/producers	2013-14	2014-15	2015-16	2016-17	2017-18 (P)
I. Pig Iron : Total*	**7950**	**9694**	**9227**	**10342**	**9924**
Public Sector	552	920	732	573	365
Private Sector	7398	8774	8495	9769	9559
II. Crude/Liquid Steel : Total	**81694**	**88979**	**89790**	**97936**	**102338**
Public Sector	16778	17205	17920	18456	19753
Private Sector	64916	71774	71870	79480	82585
III. Finished Steel for Sale (Alloy/Non-alloy): Total	**87675**	**92157**	**90980**	**101805**	**104978**
Public Sector	13439	12832	12977	14865	16047
Private Sector	74236	79325	78003	86940	88931

**Gross production including production for sale*
Figures rounded off
Source: *JPC Bulletin on Iron & Steel, April, 2018*

Table – 4 : Capacity and Production of Hot Metal and Crude/Liquid Steel, 2016-17 and 2017-18 (By Principal Producers)

(In '000 tonnes)

Unit	Annual installed capacity		Production			
	Hot metal	Crude/Liquid steel	Hot metal		Crude/Liquid steel	
			2016-17	2017-18	2016-17	2017-18
Public Sector						
Bokaro Steel Plant (Jharkhand)	4585	4360	3410	4046	3154	3694
Bhilai Steel Plant (Chhattisgarh)	4700	3925	5041	4280	4737	4072
Rourkela Steel Plant (Odisha)	2120	4400	3094	3320	2932	3220
Durgapur Steel Plant (West Bengal)	2088	1802	2318	2282	2042	2042
IISCO Steel Plant, Burnpur (West Bengal)	550	2500	1810	2055	1394	1801
Visvesvaraya Iron & Steel Plant (Karnataka)	205	118	54	_	39	-
Salem Steel Plant (Tamil Nadu)	–	180	_	_	108	97
Alloy Steel Plant, Durgapur (West Bengal)	–	234	_	_	88	96
Rashtriya Ispat Nigam Ltd (Andhra Pradesh)	3400	6300	4043	5132	3962	4731
Private Sector						
JSW Steel Ltd	_	15000	_	_	16505	17099
Tata Steel Ltd (Jharkhand)	_	12500	13059	13855	11688	12459
Essar Steel Ltd (Gujarat)	_	10000	_	_	5392	6082
Jindal Steel & Power Ltd (Chhattisgarh)	1670	8600	_	_	3445	4021
Others	_	_	_	_	42450	42924

Source: *Ministry of Steel, Annual Report, 2018-19; JPC Bulletin on Iron & Steel, April, 2018 and Annual Statistics, 2017-18*

Table – 5 : Production of Crude/Liquid Steel, 2014-15 to 2017-18 (By Route)

(In'000 tonnes)

Route/plant	2014-15	2015-16	2016-17	2017-18 (P)*
All Routes: (A+B) Total	**88979**	**89790**	**97936**	**75642**
A. Oxygen Route : Total	**37571**	**38395**	**42002**	**32629**
Bhilai Steel Plant (Chhattisgarh)	4807	5058	4737	2996
Durgapur Steel Plant (West Bengal)	2063	1975	2042	1500
Rourkela Steel Plant (Odisha)	2792	2730	2932	2387
Bokaro Steel Plant (Jharkhand)	3831	3392	3154	2694
IISCO Steel Plant (West Bengal)	141	871	1394	1302
Salem Steel Plant (Tamil Nadu)	125	120	108	67
Visvesvaraya Iron & Steel Ltd (Karnataka)	46	42	39	-
Visakhapatnam Steel Plant (RINL, Andhra Pradesh)	3296	3641	3962	3371
Tata Steel Ltd (Jharkhand)	9331	9960	11688	9406
JSW Steel Ltd (Karnataka)	10178	8385	9655	7159
Other Oxygen Route	961	2221	2291	1747
B. Electric Route: Total	**51408**	**51395**	**55934**	**43013**
Electric Arc Furnace	**23125**	**24599**	**28962**	**22881**
Alloy Steel Plant, Durgapur (West Bengal)	104	91	88	70
Essar Steel Ltd (Gujarat)	2854	3685	5391	4500
JSW Ispat Steel Ltd//JSW Steel Ltd (Maharashtra)	2958	4294	6851	5322
Jindal Steel & Power Ltd (Chhattisgarh)	3557	3177	3445	2760
Lloyds Steel Ltd	658	569	575	416
Jindal Stainless Ltd	1907	1258	1391	987
Bhushan Steel Ltd	2180	3078	5601	2345
Bhushan Power & Steel Ltd (Odisha)	1213	1832	3324	1439
Other Electric Arc Furnace Route	7694	6615	2296	5042
Electric Induction Furnace	**28283**	**26796**	**26972**	**20132**

Figures rounded off
** Production from April, 18 to December, 18*
Source: *Ministry of Steel, Annual Report, 2018-19 and JPC Bulletin on Iron & Steel, April, 2018*

Table – 6 : Prices of Steel, 2015-16 to 2017-18 (Domestic Markets)

(In ` per tonne)

Grade	Market	2015-16	2016-17	2017-18#
TMT Bars (ISI, 8 mm)	Delhi	37,006	34792	43880
Joists (150 x 75 mm)	"	35,185	33304	43590
Channels (75 x 40 mm)	"	39,257	36994	44796
MS Squares (8 mm)	"	36,310	34087	42600
MS Angles (25 x 3 mm)	"	37,126	34874	44450
Melting Scrap	"	24,898	22858	28500
Induction Ingots	"	35,552	32608	35100
Blooms (SAIL, 150 mm)	Gobind	32,038	28817	35520
Melting Scrap (rolling)	"	23,447	24192	34420
MS Rounds (10 mm)	"	32,651	30540	43500
MS Squares (8 mm)	"	32,021	29840	43520
MS Angles (25 x 3 mm)	"	36,426	33442	42280
Joists (150 x 75 mm)	"	34,136	32634	-
Induction Ingots (round)	"	29,857	28464	35220
Old Ship Breaking Scrap	"	28,356	23551	25360
Arc Ingots	Mumbai	34,116	31675	35540
Joists (150 x 75 mm)	"	34,131	32813	42780
MS Angles (40 x 6 mm)	"	35,923	33647	44100
Induction Ingots	"	33,770	31957	35200
Melting Scrap	"	24,590	23489	30900
TMT Bars (local 8 mm)	"	35,757	33442	42700
MS Rounds (8 mm)	"	30,824	28601	41400
Concast Billet Ingots	"	34,368	32091	35700
TMT Bars (ISI, 8 mm)	Kolkata	32,398	30092	44140
MS Squares (8 mm)	"	30,523	28402	43440
MS Angles (25 x 3 mm)	"	36,926	34692	44100
Channels (75 x 40 mm)	"	31,990	29691	45140
Joists (150 x 75 mm)	"	31,059	29513	42880
Induction Ingots	"	33,437	32458	35300
Melting Scrap	"	25,420	23302	29000
Arc Ingots	"	33,607	32617	35600
Concast Billet Ingots	"	34,007	32740	35700

Source: *Minerals & Metals Review, April, 2018, # data for 2017-18 is not available, hence March'18 is taken*

1. Prices include excise duty and sales tax

2. All rates are monthly averages and indicatives

3. Gobind = Mandi Gobindgarh in Punjab

Finished Steel/Crude Steel

The Indian Steel Industry continued to record increased production of Finished Steel from 87.67 million tonnes in 2013-14 to 104.98 million tonnes in 2017-18 (Production for sale). Finished Steel produced by the SAIL, TSL, RINL, ESL, JSWL, JSPL was 62.49 million tonnes while that produced by other producers was 55.40 million tonnes in the year 2017-18. The import and export of total Finished Steel stood at 7.48 million tonnes and 9.62 million tonnes respectively in the year 2017-18. Various Finished Steel products produced by principal steel plants are furnished in Table-7.

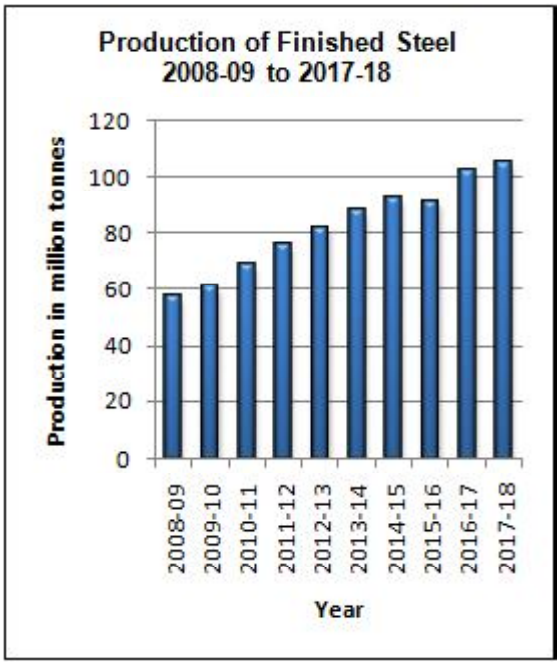
Crude Steel production has shown a sustained rise in last five years along with capacity. The Crude Steel working Capacity and Capacity Utilisation during the last five years are given below:

Production of Crude Steel and Working Capacity from 2013-14 to 2017-18

(Quantity in million tonnes)

Year	Working capacity	Production	% Utilisation
2013-14	102.26	81.69	80%
2014-15	109.85	88.98	81%
2015-16	121.97	89.79	74%
2016-17	128.28	97.94	76%
2017-18	130.08	102.34	79%

Figures rounded off



Production of Crude Steel grew at a CAGR of 5.71% from 81.69 million tonnes in 2013-14 to 102.34 million tonnes in 2017-18.The contribution of public and private sector was 19.75 million tonnes and 82.58 million tonnes, respectively.

Basic Oxygen Furnace (BOF)

Presently, there are around 17 Basic Oxygen Furnace units with an installed capacity of 50.84 million tonnes, respectively.

Electric Arc Furnace (including corex & MBF/EOF)

Steel produced in the Electric Arc Furnace (including corex & MBF/EOF) is mostly by recycling of steel scrap using Electric Arc Furnace (EAF). Presently, there are more than 47 EAF based steel plants that are operational in the country with an aggregate working capacity of around 37.57 million tonnes per annum.

The recent developments in EAF technology, viz, to increase oxygen consumption, to reduce power consumption and to reduce tap time have led to increase in metal production. The development of thin slab casting has made EAF route more productive. This route enables slab strips rolling at lesser cost, facilitating production of cheaper strips/ sheets than those that can be achieved through BF/ BOF route.

Induction Furnace (IF)

Presently, in India, EAF based industries are yet to switch over to induction furnace route. An induction furnace is an electrical furnace in which heat is generated through electro-magnetic induction in an electrically conductive medium. Induction furnaces use steel melting scraps, sponge iron and pig iron/cast iron. On an average, the proportion of these items is 40% sponge iron + 10% cast iron or pig iron and the remaining is steel melting scraps. There are around 1126 nos. of ground induction furnaces with an aggregate working capacity of about 39.53 million tonnes.

Pig Iron

Pig iron is one of the basic raw materials required by the Foundry & Casting Industry for manufacturing various types of castings for the engineering section. The main sources of pig iron have traditionally been the integrated steel plants of SAIL besides plants of Tata Steel Ltd and Rashtriya Ispat Nigam Ltd. Domestic production of pig iron lags behind and is not in tandem with the demand. Efforts were, therefore, made to increase pig iron manufacturing facilities in the secondary sector. In 2017-18 about 9.40 million tonnes of pig iron was produced for sale in the country.

Table – 7 : Various Finished Steel Products Produced by Principal Steel Plants

Plant	Products
Bokaro Steel Plant (Jharkhand)	Plates, HR coils, HR sheets, CR coils, CR sheets, GP/GC sheets, TMBP.
Durgapur Steel Plant (West Bengal)	Bars & rods, rails & railway materials, wheels and axles, fish plates, sleeper structurals, bars, rods, TMT bars, skelp, bloom, billets, slabs.
Rourkela Steel Plant (Odisha)	Flat products, bars and rods, plate, HR coil, CR coil, CR sheets, GP/GC sheets, electrical sheets, electrolytic tin plates, spirally welded large dimension pipes.
Bhilai Steel Plant (Chhattisgarh)	Billets, slabs, rails & railway materials, heavy structurals and squares, plates, merchant products, wire rods, plates and blooms.
IISCO Steel Plant (West Bengal)	Bars & rods, rail & railway materials, foundry & pipes and structural steel.
Visvesvaraya Iron & Steel Ltd (Karnataka)	Stainless steel, tool steel, other alloys & steel, bearing steel, spring steel, free cutting steel, constructional steel (a) carbon steel, (b) case hardening steel & (c) heat treatable steel.
Visakhapatnam Steel Plant (Andhra Pradesh)	Steel products in long categories, finished steel (round & square), wire rods, re-bars, angles (equal & unequal), sections, channels, beams, saleable billets, flat products, light & medium merchant products (bars), medium merchant products (structural).
Tata Steel Ltd (Jharkhand)	Bars & rods, HR sheets and strips, CR coils, rolled/forged bars & structurals, plates, GP/GC sheets.
JSW Steel Ltd (Karnataka)	Plates, HR sheets, HR coils, CR coils/sheets, GP/GC sheets.
Ispat Industries Ltd (Maharashtra)	HR coils, CR coils/sheets, GP/GC sheets.
Essar Steel Ltd (Gujarat)	Plates, HR sheets, HR coils, CR coils/sheets, GP/GC sheets.
Jindal Steel & Power Ltd (Chhattisgarh)	Plates, structurals, HR coils, rails & railway materials.

Source: *Ministry of Steel, Annual Report, 2017-18 and information from individual plants*

As a result of various policy initiatives taken by the Government, the Private Sector showed considerable interest in setting up new pig iron units, especially in the post-liberalised period. This has resulted in drastic change in the contribution of Private/Secondary Sector producers. In 2017-18, about 9.40 million tonnes pig iron was produced for sale in the country. The production of pig iron by SAIL, TSL, RINL, ESL, JSWL, JSPL (combined) and other producers is furnished in Table-3. The total share of SAIL, TSL, RINL, ESL, JSWL and JSPL was 7%, whereas the total share of other producers was 93% in the financial year 2017-18. Location and capacity of principal pig iron units in Private Sector are furnished in Table- 8.

Table – 8 : Location and Capacity of Principal Pig Iron Units

(In lakh tonnes)

Sl.No.	Unit	Location	Capacity
1.	Srikalahasthi Pipes Ltd (formerly Lanco Industries Ltd)	Chittoor, Andhra Pradesh	2.75
2.	Sathavahana Ispat Ltd	Haresamudram, Andhra Pradesh	2.10
3.	Jayaswal NECO Industries Ltd	Raipur, Chhattisgarh	6.50
4.	Vedanta Ltd	Amona, Goa	7.42
5.	Usha Martin Industries	Jamshedpur, Jharkhand	6.00
6.	JSW Steel Ltd	Vijaynagar, Dolvi & Salem	180.00
7.	Kalyani Steels Ltd	Hospet, Karnataka	2.90
8.	Kirloskar Ferrous Industries Ltd	Koppal, Karnataka	3.60
9.	KIOCL Ltd	Mangaluru, Karnataka	2.16
10.	Tata Metaliks Ltd	Redi, Maharashtra	3.16
11.	IDCOL Kalinga Iron Works Ltd	Barbil, Kendujhar, Odisha	3.45
12.	Kajaria Iron Castings Ltd	Durgapur, West Bengal	1.10
13.	Electrosteel Castings Ltd	Khardah, West Bengal	3.60
14.	Tata Metaliks Ltd	Kharagpur, West Bengal	3.45
15.	Sona Alloys Pvt. Ltd	Satara, Maharashtra	3.14
16.	Aparant Iron & Steel Pvt. Ltd	Sanguem, Goa	1.60
17.	Steel Authority of India Ltd	Bhilai, Bokaro, Durgapur, Burnpur, Rourkela, Bhadravati	235.00
18.	Rashtriya Ispat Nigam Ltd	Visakhapatnam, Andhra Pradesh	65.00
19.	Monnet Ispat Ltd	Raigarh, Chhattisgarh	7.00
20.	MESCO Steel Ltd	Kalinganagar, Odisha	4.50
21.	Jai Balaji Industries Ltd	Durgapur, West Bengal	5.09
22.	Kirloskar Ferrous Industries Ltd	Hospet, Karnataka	3.60
23.	KIC Metalliks Ltd	Durgapur, West Bengal	1.65
24.	JSPL	Raigarh, Chhattisgarh	20.00
25.	VSL Steels Ltd	Hiriyur, Karnataka	3.60
26.	Jindal Saw Pipes Ltd	Mundra, Gujarat	3.60
27.	Ramsarup Loha Udyog	Kharagpur, West Bengal	3.00
28.	Adhunik Metaliks Ltd	Sundargarh, Odisha	2.14
29.	SLR Steels Ltd	Hospet, Karnataka	2.10
30.	VISA Industries Ltd	Kalinganagar, Odisha	1.75
31.	Rashmai Metaliks Ltd	Kharagpur, West Bengal	1.75
32.	New Metaliks Ltd	Durgapur, West Bengal	1.75
33.	Neelachal Ispat Nigam Ltd	Kalinganagar, Odisha	11.00

Source: *MCDR Returns (Form-O), Website of concerned company, Iron & Steel Review, JPC Bulletin and Ministry of Steel*

Sponge Iron

India is the largest producer of sponge iron in the world. Sponge iron is produced by direct reduction method which may be either gas-based or coal-based. Direct Reduced Iron (DRI), called as sponge iron is a metallic material formed by reduction of iron oxide at temperatures below the fusion point of iron. Hot Briquetted Iron (HBI) is a product obtained after densification process where the DRI feed material is at temperature more than 650^0 C at the time of moulding (hot briquetting) with density more than 5.0 g/cm^3.

During early 1990s, Sponge Iron Industry was specially promoted to provide an alternative to steel melting scrap which was increasingly becoming scarce. The production of sponge iron during the last five years is provided in Table-2. The installed capacity of sponge iron has also increased over the years from 1.52 million tonnes in 1990-91 to 49.62 million tonnes in 2017-18. Over the years, the coal-based route has emerged as a key contributor to overall production – its share increased from 63% in 2004-05 to 79% in 2017-18. In the year 2017-18, a total of 30.51 million tonnes of sponge iron was produced, which includes of sponge iron for own consumption.

Production of sponge iron in the country has also resulted in providing an alternative feed material to steel melting scrap which was hitherto imported in large quantities by the Electric Arc Furnace units and the Induction Furnace units for steel making. This has resulted in a considerable saving in foreign exchange. The available data on annual installed capacity of principal sponge iron units are furnished in Table-9.

Table – 9 : Capacities of Principal Sponge Iron (DRI) Plants

(In lakh tonnes)

Unit	Location	Capacity
Gas-based		
Essar Steel Ltd	Hazira, Gujarat	68.0
JSW Steel Ltd. (Salav) (formerly Welspun Maxsteel Ltd)	Salav, Raigad, Maharashtra	9.00
JSW Steel (formerly Ispat Industries Ltd)	Geetapuram, Dolvi, Raigad, Maharashtra	16.00
Coal-based		
Action Ispat & Power Pvt. Ltd	Marakuta & Pandaripathar, Jharsuguda, Odisha	2.50
Adhunik Metaliks Ltd	Chandrihariharpur, Sundargarh, Odisha	1.80
Alliance Integrated Metallics Ltd	Bemta, Raipur, Chhattisgarh	5.00
Anjani Steel Ltd	Ujalpur, Raigarh, Chhattisgarh	1.02
Anindita Steels Ltd	Rabodh, Jharkhand	1.46
API Ispat Powertech Pvt. Ltd	IGC Siltara, Raipur, Chhattisgarh	1.05
Beekay Steel & Power Ltd	Uliburu, Barbil, Odisha	1.05
Bhushan Steel & Strips Ltd	Meramandali, Dhenkanal, Odisha	2.80
Bihar Sponge Iron Ltd	Chandil, Singhbhum, Jharkhand	2.10
Crest Steel & Power Pvt. Ltd	Joratarai, Rajnandgaon, Chhattisgarh	2.10
Deepak Steel & Power Ltd	Topadihi, Kendujhar, Odisha	1.44
Gallant Metal Ltd	Samakhiali, Kachchh, Gujarat	1.70
Gallant Ispat Ltd	Sahjanwa, Gorakhpur, UP	1.00
Global Hi-tech Industries Ltd	Gandhidham, Gujarat	1.05
Goa Sponge Iron & Power Ltd	Santona, Sanguem, Goa	1.00
Godawari Power & Ispat Ltd	IGC Siltara, Raipur, Chhattisgarh	4.95

(Contd.)

Table - 9 (Concld.)

Unit	Location	Capacity
Gopani Iron & Power Pvt. Ltd	Tadali, Chandrapur, Maharashtra	1.20
Goldstar Steel & Alloys Ltd	Srirampuram, Vizianagaram, Andhra Pradesh	2.20
Grewal Associates Pvt. Ltd	Matkambed, Kendujhar, Odisha	1.20
Haldia Steels Pvt. Ltd	Durgapur, West Bengal	1.20
Ind Synergy Ltd	Kotmar, Raigarh, Chhattisgarh	3.00
Jai Balaji Sponge Ltd	Baktarnagar, Raniganj, West Bengal	1.05
Jai Balaji Jyoti Steels Ltd	Sundargarh, Odisha	1.20
Jai Shri Balaji Steel Pvt. Ltd (HEG Ltd)	Borai, Durg, Chhattisgarh	1.20
Jaiswal Neco Ltd	IGC Siltara, Raipur, Chhattisgarh	2.55
Janki Corporation Ltd	Sidiginamola, Ballari, Karnataka	1.80
Jindal Steel & Power Ltd	Kharsia Road, Raigarh, Chhattisgarh	1.37
Lloyds Metals & Engineering Ltd	Ghuggus, Chandrapur, Maharashtra	2.70
Mastek Steels Pvt. Ltd	Holakundi, Ballari, Karnataka	1.05
MGM Steels Ltd	Chintapokhri, Dhenkanal, Odisha	1.05
Monnet Ispat Energy Ltd	Chandkhuri Marg, Hasaud, Raipur, Chhattisgarh	3.00
Monnet Ispat & Energy Ltd	Naharpalli, Raigarh, Chhattisgarh	5.00
MSP Steel & Power Ltd	Jamgaon, Raigarh, Chhattisgarh	1.92
Nalwa Steel & Power Ltd	Taraimal, Raigarh, Chhattisgarh	1.98
Nova Iron & Steel Ltd	Dagori, Bilaspur, Chhattisgarh	1.50
OCL Iron & Steel Ltd	Lamloi, Sundargarh, Odisha	1.20
Orissa Sponge Iron Ltd	Palaspanga, Kendujhar, Odisha	2.50
Prakash Industries Ltd	Champa, Janj-gir-Champa, Chhattisgarh	4.50
Rungta Mines Ltd	Karakola and Kamando, Sundargarh, Odisha	4.20
Rashmi Cement Ltd	Barbil, Kendujhar, Odisha	3.60
Sarda Energy & Minerals Ltd	IGC Siltara, Raipur, Chhattisgarh	2.10
Scaw Industries Pvt. Ltd	Gundichapara, Dhenkanal, Odisha	1.00
Shivshakti Steel Ltd	Chakradharpur, Raigarh, Chhattisgarh	1.00
Shri Bajrang Power & Ispat Ltd	Urla, Raipur, Chhattisgarh	2.10
Shyam Sel Ltd	Dewabdighi, Burdwan, West Bengal	1.00
Singhal Enterprises Pvt. Ltd	Taraimal, Raigarh, Chhattisgarh	2.53
Sree Metaliks Ltd	Loidapada, Kendujhar, Odisha	1.74
Sri Venkatesh Iron & Alloys Ltd	Ramgarh, Jharkhand	1.20
S.K.S. Ispat & Power Ltd	Raipur, Chhattisgarh	2.70
Sunflag Iron & Steel Co Ltd	Bhandara, Maharashtra	1.50
Sunil Ispat & Power Ltd	IGC Siltara, Raipur, Chhattisgarh	1.15
Sunil Sponge Iron Ltd	Chiraipani, Raigarh, Chhattisgarh	1.05
Tata Sponge Iron Ltd	Joda, Kendujhar, Odisha	3.90
Vandana Global Ltd	IGC Siltara, Raipur, Chhattisgarh	2.16
Vallabh Steels Ltd	Sahnewal, Ludhiana, Punjab	1.20
Visa Steels Ltd	KIC, Jajpur Road, Odisha	3.00
Zoom Vallabh Steels Ltd	Dughda, Saraikela-Kharswan, Jharkhand	1.20

I.G.C.: Industrial Growth Centre
Source: *Sponge Iron Manufacturers' Association (SIMA) and individual plants*

Consumption of Steel

As per World Steel Association, India's per capita steel consumption increased from 56 kg in 2011 to 65.2 kg in 2017 and it is far below the level of other developed and some of the developing countries. The world per capita steel consumption in 2017 is reflected as 214.5 kg.

Apparent consumption of steel is calculated by taking into consideration with respect to export of steel, total domestic production and import of steel in the country. It is also treated as the actual domestic demand of steel in the country. The apparent consumption of finished steel in India since 2013-14 is furnished in Table-10.

Table – 10 : Domestic Consumption of Finished Steel

(In million tonnes)

Year	Consumption
2013-14	74.09 (0.83%)
2014-15	76.99 (3.91%)
2015-16	81.52 (5.88%)
2016-17	84.04 (3.00%)
2017-18	90.68 (7.90%)

Source: *JPC Bulletin on Iron & Steel, April, 2018*
Figures in parentheses indicate the percentage increase over the previous year

Domestic actual consumption of total finished steel (alloy/stainless+non-alloy) stood at 90.68 million tonnes in 2017-18 as against 84.04 million tonnes in 2016-17, thus increased by 7.9% as compared to last year.

The normal demand of steel for infrastructure is 23%, construction 22%, manufacturing 18%, automobiles 12%, consumer durables 6% and other sectors 19%. With the ongoing economic liberalisation resulting in faster economic growth, the steel consumption is expected to increase rapidly.

With the expansion of capacities in the integrated plants and installation of new plants, additional supply of steel in Indian markets has increased considerably. This has created an intense competition in the domestic market in the short run.

MODERNISATION & EXPANSION

Modernisation and expansion works undertaken by different plants are as follows:

SAIL

Steel Authority of India Limited has undertaken modernisation expansion of its integrated steel plants at Bhilai, Bokaro, Rourkela, Burnpur and special steel plant at Salem. In the current phase, the crude steel capacity is being enhanced from 12.8 million tonnes to 21.4 million tonnes per annum. The indicative investment for current phase is about `61,870 crore. The cumulative expenditure for various modernisation & expansion has been ` 67,432 crore till 30th April, 2018.

The plant-wise capacity enhancement details by 2017-18 are given below:

Hot Metal

(In million tonnes)

Plant Name	Installed Capacity	Expansion Capacity
BSP	4.08	7.50
DSP	2.09	2.45
RSP	2.00	4.50
BSL	4.59	5.77
ISP	0.85	2.91
VISL	0.22	0.33
Total	**13.82**	**23.46**

Crude Steel

(In million tonnes)

Plant Name	Installed Capacity	Expansion Capacity
BSP	3.93	7.00
DSP	1.80	2.20
RSP	4.40	4.20
BSL	4.36	4.61
ISP	2.50	2.50
ASP	0.23	0.48
SSP	0.18	0.18
VISL	0.12	0.23
Total	**17.32**	**21.40**

The modernisation & expansion of Bokaro Steel Plant (BSL), Durgapur Steel Plant (DSP), Rourkela Steel Plant (RPS), IISCO Steel Plant (ISP) and Salem

Steel Plant has been completed. At IISCO Steel Plant, Burnpur, India's largest blast furnace (4,160 m^3) has been installed.

At Bhilai Steel Plant, Rail Welding Line, Ore Handling Plant Part-A, 2nd Sinter Machine in Sinter Plant-3, Coke Oven Battery-11 and Universal Rail Mill are in regular operation. Hot-trial of Bar Mill has started. Balance facilities of Steel Melting Shop-III are at advanced stages of completion.

SAIL is finalising its Vision-2025 document, proposals for innovation are expected to steer the Company to increase its production capacity of Hot Metal to 50 MTPA, along with related/enabling business activities in line with growing demand of steel in the country. This will not only enhance SAIL's contribution to nation building but will also place SAIL amongst the top steel companies globally.

Rashtriya Ispat Nigam Ltd (RINL)

Visakhapatnam Steel Plant (VSP) of RINL is the first shore-based integrated steel plant located at Visakhapatnam in Andhra Pradesh. The Modernisation & up-gradation to 7.3 Mtpa is completed, with the commissioning of additional Caster in SMS-2 in Dec'17. The revamp of Sinter Machine-2 is planned in 2018-19. The units are under advanced stage of stabilisation & ramp up. The plant has been built to match international standards in design and engineering with state-of-the-art technology, incorporating extensive energy saving and pollution control measures.

National Mineral Development Corporation (NMDC)

NMDC is setting up a 3.0 MTPA Greenfield Integrated Steel Plant at Nagarnar, Bastar District in Chhattisgarh. Construction work for the project is in progress and as on date around 90.59% of civil work, 79.01% structural erection, 60.36% equipment erection have been completed as on 31st Dec'17. The progress has picked up momentum since then in the last Quarter.

NMDC is in the process of expanding its business through forward integration in both Greenfield and Brownfield through following projects:

(a) 1.2 MTPA Pellet Plant at Donimalai in Karnataka.

(b) 2.0 MTPA Pellet Plant at Nagarnar along with 2.0 MTPA Ore Processing Plant at Bacheli interconnected by a Slurry Pipeline System between Bacheli and Nagarnar in Chhattisgarh.

Tata Steel Ltd (formerly TISCO)

The Company has been rechristened as Tata Steel Ltd (TSL). The Company has an integrated steel plant located at Jamshedpur, Jharkhand, with annual crude steel making capacity of 12.5 million tonnes and variety of finishing mills. TSL has produced 12.077 million tonnes of finished steel in 2017-18 as compared to 11.11 million tonnes in 2016-17. The production of crude steel in 2017-18 was 12.46 million tonnes as against 11.69 million tonnes in 2016-17.

JSW Steel Ltd

JSW Steel Ltd's combined installed capacity of its plants at Karnataka, Tamil Nadu and Maharashtra of crude steel was 18 million tpy with value added products constituting 1.8 million tpy spread across six locations; Toranagallu (Vijayanagar Works), Salem (Salem Works), Vasind, Tarapur (downstream units), Dolvi and Kalmeshwar (Maharashtra). Vijayanagar Works existing operations produce flat and long steel products; Salem Works has its focus only in long products while the downstream units produce CR/galvanised, colour-coated, value-added flat products. Vijayanagar Works has integrated operations from beneficiation plant to 1 million tpy Cold Rolling Mill Complex. The Salem Works has an integrated manufacturing facility with an overall crude steel capacity of 1 million tpy, comprising sinter plant, blast furnace, EOF, billet caster, bloom caster & rolling with associated facilities, such as, coke oven, power plant, oxygen plant, etc. The slabs and HR coil produced at Vijaynagar Works are further processed in downstream units at Vasind and Tarapur into value-added HR plates, CR, galvanised, galvalume and colour-coated products.

The Company has enhanced the total capacity to 12 million tpy at Vijayanagar Works. The Vijaynagar works is also the first Indian plant that undertakes large-scale, low-grade iron beneficiation process. Its 4.62 MTPA coke manufacturing unit is also the largest such facility in a single location.

The Company has a manufacturing capacity of 9.2 MT of pellets annually at Vijayanagar.

JSW Steel has acquired a majority stake in Ispat Steel w.e.f. 21.12.2010. It has set up one of the largest integrated steel plants in the Private Sector in India at Dolvi in Raigad district, Maharashtra. The plant has a capacity to produce 5 million tonnes of Steel per annum. The Integrated Steel plant functions on the Convertor-cum-Electric Arc Furnace route (CONARC Process) to produce steel through modern Twin Shell Electric Arc Furnace. JSW steel announced that steel making capacity at Dolvi Works would be increased from existing 5 MTPA to 10 MTPA. The major facilities included in the project are a 4.5 MTPA Blast furnace with 5 MTPA Steel Melt Shop, 5 MTPA Hot Strip Mill, 5.75 MTPA Sinter plant, 4 MTPA Pellet Plant and 4 kilns of 600 TPD. The expansion project at Dolvi to 10 MTPA is expected to be commissioned by March 2020.

Salem works is India's largest special Steel plant with 1MTPA capacity and produces about 850 special grades of steel. The company capacity expansion roadmap and key projects are as below

Plant	Targeted Capacity	Timeline
Vijaynagar Works	13 MTPA	Dec. 2019
Dolvi Works	10.7 MTPA	Dec.2020

Jindal Steel & Power Ltd (JSPL)

JSPL having manufacturing facilities for steel products in three locations; Raigarh in Chhattisgarh, Angul in Odisha and Patratu in Jharkhand. JSPL has set up a rail & universal beam plant. The sponge iron plant at Raigarh, Chhattisgarh has capacity of 1.37 million tpy. Facilities at Raigarh also include a Sinter plant of 2.84 MTPA and Steel melt shop of 3.25 MTPA.

JSPL has successfully completed Angul Greenfield project with installation of 6 MTPA integrated steel plant in Odisha along with successful commissioning of 4554 m3 blast furnace and 1 MTPA coke oven along with 250 tonnes per heat BOF.

Essar Steel Limited (ESL)

A state-of-the-art hot rolled coil steel plant was set up at Hazira, Gujarat with 10 million tonnes capacity per annum supported by a 20 MTPA pellet facility. It is the largest fully-integrated manufacturer of high-quality flat steel products in western India. The Company's operations include 8 million tpy and 12 million tpy beneficiation plants at Bailadila in Chhattisgarh and Dabuna in Odisha. Essar has the world's second largest slurry pipeline of 267 km and also 253 km to transport beneficiated iron ore slurry to the pellet plants namely, 8 million tpy pellet complex at Visakhapatnam, Andhra Pradesh and 6 million tpy plant at Paradip, Odisha. The Essar Steel Complex at Hazira in Surat district, Gujarat houses the world's largest gas-based single location sponge iron plant with a capacity of 6.8 million tpy. The complex also houses 1.4 million tpy cold rolling plant, 4.6 million tpy electric arc furnace, 4.6 million tpy continuous caster and 3.6 million tpy hot strip mill. Outstanding performance has been observed in the 3 DRI-HBI modules of the company.

The Company has plans to double the capacity of pelletisation at Paradip, Odisha from 6 MTPA to 12 MTPA. The scheme also includes installation of pellet plant and iron ore beneficiation plant. The Company has plans to set up a steel plant of 3.2 million tonnes per annum capacity at Bastar, Chhattisgarh, (In the first phase, a 1.6 million tpy steel plant with a captive power plant is to be set up), 3 million tonnes per annum in Jharkhand and 6 million tonnes per annum in Karnataka.

IRON & STEEL SCRAP

Iron & steel scrap is one of the essential requirements for manufacture of steel in Mini-steel Industry. It is also consumed by some major steel plants. Scrap, especially from the Ship Breaking Industry supplies substantial quantity of re-rollable steel and steel scrap for the Iron & Steel Industry. Iron scrap is available in the country in the form of pressed bundles, a mixture of used steel components (called as a commercial scrap), turnings & borings and heavy melting scrap. These are generated by industries of all sectors like automobiles, railways and engineering workshops.

The collection and processing of scrap in an organised manner is undertaken by a few units in the country. In the local market, scrap

is supplied by dealers who in turn arrange to have scrap collected manually or through sub-dealers.

The consumption of scrap is mainly reported by Induction Furnace and Electric Arc Furnace units, Integrated Steel Plants and Alloy Steel & Foundry industries. Scraps are used in the Steel Sector after recycling. Recycling scrap helps in conservation of energy as remelting of scrap requires much less energy than production of iron or steel from iron ore. Also, the consumption of iron and scrap by remelting reduces the burden on landfill disposal facilities and prevents the accumulation of abandoned steel products in the environment. It increases the availability of semi-finished material, which otherwise would have to be produced using the ore. Thus, it helps in conservation of natural resources.

Ship Breaking

Ship breaking has been a major source of scrap generation. Ship breaking activities are carried out at various places on the Indian coast, the largest concentration being in the West coast. Private entrepreneurs handle the task of ship breaking in India. It is a labour-intensive job, and in India, it is a cost-efficient activity. Locations of present ship breaking activities are:

i) Alang and Sosiya yards in Bhavnagar district, Gujarat,

ii) Sachana district, Gujarat

iii) Mumbai and

iv) Kolkata

Alang & Sosiya yards account for 98% concentration of the Ship Breaking Industry in India. The yard has capacity to recycle about 450 ships per year generating re-rollable steel of > 4.5 million tonnes per annum. There are a total of 167 plots available for ship recycling spread over 10 km stretch along the coast of Alang. As per NGO Shipbreaking Platform around 835 ships were recycled in 2017 and out of which 29% recycled in India, the share is 38% in 2012. During 2016-17 and 2017-18, a total of 256 and 253 ships were beached by the Industry accounting for around 2.75 million tonnes and 2.50 million tonnes, respectively, in terms of LDT (Light Displacement Tonnage, viz, physical weight of a ship). Today, Alang possibly represents the single largest concentration of Ship Breaking Industry in the world. The life of an average ocean-going ship is about 25-30 years. About 40% of the ships broken are dry cargo ships, while the remaining 40% of the ships broken are wet cargo, tanker and specialised ships. These recyclable steels mainly as steel scrap provide feed to Steel and Foundry Industry in India. The steel generated from ship recycling contributes to around 1% to 2% of the domestic steel demand.

The recommendations of a committee of Technical Experts on Ship Breaking set up by the Government of India on the directions of the Hon'ble Supreme Court have been accepted by the Hon'ble Supreme Court on 6.9.2007, on the issue of handling & management of the hazardous industrial waste generated during ship breaking. In pursuance of the directions of the Hon'ble Supreme Court in CWP 657 of 1995, Government of India in the Ministry of Steel had formulated and notified the comprehensive code for ship breaking and ship recycling, namely Ship breaking Code, 2013, vide Notification dated 7th March, 2013.

MSTC Ltd

(Formerly Metal Scrap Trade Corp. Ltd)

Presently, the Company undertakes trading activities, e-commerce, disposal of ferrous and non-ferrous scrap, surplus stores and other secondary arising mostly from Public Sector Undertakings and Government Departments, including Ministry of Defence. The Company also undertakes import of raw materials in bulk required by large industrial houses on back-to-back basis. The items of import include petroleum products, low ash metallurgical coke, coking coal, steam coal, DR pellets, HR coils and heavy melting scrap. It also undertakes trading of items within the country in competition with any other private trader.

Ferro Scrap Nigam Ltd (FSNL)

FSNL is a wholly owned subsidiary of MSTC Ltd under the Ministry of Steel. The Company undertakes the recovery and processing of scrap from slag and refuse dumps in the nine steel plants

at Bhilai, Bokaro, Burnpur, Durgapur, Rourkela, Visakhapatnam, Dolvi, Duburi and Haridwar and also at Rail Wheel factory Bengaluru. The scrap so recovered is returned to the steel plants for recycling disposal and the Company is paid processing charges on the quantity recovered at varying rates depending on the category of scrap. Scrap is generated during iron & steel making and also in the rolling mills. In addition, the Company provides steel mill services, such as, scarfing of slabs, handling of BOF slag, etc. In the year 2017-18 (April-December, 2017), the FSNL has recovered 2.34 million tonnes of scrap having value of ` 2058.68 crores.

TRADE POLICY

As per the notified Export-Import Policy incorporated under the Foreign Trade Policy (FTP) for 2015-20, the imports of primary forms of pig iron, spiegeleisen, sponge iron, ferro-alloys, stainless steel, remelting scrap, as also the semi-finished products of iron, non-alloy steel or stainless steel (such as flat-rolled products, bars, rods, coils and wires), primary and semi-finished forms of other alloy-steels, etc. are unrestricted. Similarly, the exports are also allowed freely.

WORLD REVIEW

The world production of pig iron in 2017 was about 1,272 million tonnes as against 1,237 million tonnes in 2016. China (56%), India (8%), Japan (6%), and Russia & Korea, Rep. of (4% each) were the main producers. Countries namely, Brazil, USA, Germany and Ukraine too featured in the list as principal producers (Table-11).

The world crude steel production in 2017 slightly increased to 1,689 million tonnes from 1,628 million tonnes in 2016. China was the top producer accounting for 49% of world's crude steel production, followed by Japan & India (6% each), USA (5%) and Russia & Korea, Rep. of (4% each). Other important producers were Germany, Turkey, Brazil and Italy (Table-12).

Table – 11 : World Production of Pig Iron (By Principal Countries)

(In '000 tonnes)

Country	2015	2016	2017
World Total	**1235000**	**1237000**	**1272000**
Brazil	32110	29680	32151
China	691413	702273	710759
France	10097	9724	10678
Germany	27844	27269	28410
India*	74621	77254	96313
Iran	17005	18264	21694
Japan	81011	80186	78330
Korea, Rep. of	47639	46336	47100
Mexico	10074	9782	10760[e]
Russia	53700	51900	52200
Taiwan	14370	14890	14361
Turkey [e]	20000	20000	20000
USA	25435	22293	22395
Ukraine	21863	23560	19798
Other countries	107650	103121	107460

Source: *World Mineral Production, 2013-2017, BGS*
** India's production of Pig Iron during 2015-16, 2016-17 and 2017-18 was 9,227 thousand tonnes, 10,342 thousand tonnes and 9,942 thousand tonnes, respectively*

Table – 12 : World Production of Crude Steel (By Principal Countries)

(In '000 tonnes)

Country	2015	2016	2017
World: Total	**16200000**	**1628000**	**1689000**
Brazil	33256	31275	34350
Canada	12473	12672	13614
China	803825	807609	831278
France	14984	14413	15505
Germany	42674	42081	43910
India*	89790	97443	102338
Iran	16656	18466	21840
Italy	22018	23372	24069
Japan	105134	104775	104661
Korea, Rep. of	69670	68575	71080
Mexico	18228	18811	20504
Russia	69400	69600	68620
Spain	14845	13654	14444
Taiwan	20815	20858	21370
Turkey	31517	33163	37524
USA	78845	78475	81612
UK	10907	7635	7491
Other countries	164945	164998	174807

Source: *World Mineral Production, 2013-2017, BGS*
**India's production of crude steel during 2015-16, 2016-17 and 2017-18 was 89,790 thousand tonnes, 97,936 thousand tonnes and 1,02,338 thousand tonnes, respectively*

FOREIGN TRADE

Exports

Exports of iron and steel (total) increased sharply in 2017-18 to 16.99 million tonnes from 15.44 million tonnes in the previous year. Steel exports in 2017-18 comprised mainly of semi-finished steel (including steel ingots) with 8.11 million tonnes (48%) and finished steel (including cold rolled sheets) with 5.93 million tonnes (35%). Other items together accounted for the remaining 17% exports. Exports in 2017-18 were mainly to Nepal (11%), Italy (9%) and USA & UAE (7% each). Exports of pig and cast iron including spiegeleisen increased to 5.58 lakh tonnes in 2017-18 from 4.89 lakh tonnes in the previous year. Exports were mainly to Thailand (25%) followed by Bangladesh 15% and Taiwan 12% . (Tables- 13 to 22).

Imports

Imports of iron and steel (total) in 2017-18 increased by 3% to 15.16 million tonnes from 14.71 million tonnes in the previous year. Imports in 2017-18 comprised iron & steel scrap with 5.43 million tonnes (36%), finished steel, including cold rolled sheets with 4.16 million tonnes (27%) and semi-finished steel including ingots with 3.78 million tonnes (25%). Imports in 2017-18 were mainly from China (20%), Republic of Korea (19%), Japan (9%), UAE (7%) and USA (5%). The imports of pig and cast iron (including spiegeleisen) decreased to 64 thousand tonnes in 2017-18 from 77 thousand tonnes in the previous year. Imports were mainly from China (16%), South Africa (11%) and Sweden & Russia (7% each) (Tables-23 to 32).

Table – 13 : Exports of Iron & Steel (Total)
(By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**15440562**	**861511743**	**16989743**	**996976918**
USA	873628	102838078	1159363	120532013
Italy	1250260	57425476	1446156	70762861
Nepal	1684895	47827836	1908065	61857647
UAE	1214767	64929527	1159428	59376596
Belgium	1219003	55489955	1060714	56327045
Vietnam	1138586	37985147	1063761	37298987
Germany	196911	29585816	189601	33466556
Spain	546016	26346596	628581	32325604
Indonesia	367389	19727264	680966	31916292
Saudi Arabia	471928	27805661	469825	25941542
Other countries	6477179	391550387	7223283	467171775

Table – 14 : Exports of Iron & Steel (Finished Steel Including CR Sheet) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**5724816**	**309416391**	**5934560**	**340070535**
USA	454272	36041335	456555	39750215
Nepal	754738	19474549	965929	28011441
Belgium	420527	24076492	404796	27069221
Indonesia	202814	11898683	450174	21505513
UAE	559212	28619281	326345	18272606
Italy	198314	13595229	254501	16868254
Spain	209201	11862980	169102	12112259
Saudi Arabia	262941	13868056	159989	9851963
Sri Lanka	105219	4119962	179303	7995089
Canada	50725	3594503	92316	7677768
Other countries	2506853	142265321	2475550	150956206

Table – 15 : Exports of Iron & Steel (Steel wire) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**137394**	**17102043**	**174707**	**21901010**
USA	20401	3400137	25747	4336867
Netherlands	19803	2661855	21959	3313493
Turkey	5881	828348	7701	1198853
Bangladesh	5830	306518	15460	891446
Russia	4040	668339	4647	806136
Italy	4410	653501	4375	736582
Germany	2689	500431	3512	700136
UAE	7975	589432	8688	671672
Korea, Rep. of	2654	487714	3420	655943
Philippines	714	123486	16886	635410
Other countries	62997	6882282	62312	7954472

Table – 16 : Exports of Iron & Steel (Other Finished Steel, NES) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**1810985**	**268043866**	**2015420**	**296484263**
USA	278454	56873223	480658	66364023
Germany	105941	19903360	113574	22049919
UAE	142868	18312162	227338	19442171
UK	97740	14153927	133299	15545586
Italy	34469	7547455	41135	8413468
Netherlands	51196	8295460	53205	8362374
Saudi Arabia	90309	9776171	66785	7228406
France	29376	6219344	32367	6532047
Canada	40532	5706502	43168	6289121
Australia	35507	4682295	41559	6127811
Other countries	904593	116573967	782332	130129337

Table – 17 : Exports of Iron & Steel (Semi-finished Steel Including Steel Ingot) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**7274670**	**254345758**	**8110561**	**316858581**
Italy	1000785	35065411	1080836	41557309
Vietnam	1087877	34123414	1031330	33745896
Nepal	806312	22740915	824415	27853714
Belgium	770159	27353103	619034	24859559
UAE	496511	16605586	590788	20610812
Spain	316464	10901808	433887	16396971
Malaysia	563422	16857468	402643	13958658
Sri Lanka	133678	4222993	281914	9689679
USA	113406	5966092	186620	9226962
Saudi Arabia	117082	3943108	217545	8306285
Other countries	1868974	76565860	2441549	110652736

Table – 18 : Exports of Iron & Steel : Alloy Steel (Granules) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**113**	**13224**	**183**	**18119**
USA	44	7817	65	10891
Malaysia	33	2488	30	1715
UAE	7	858	19	1216
Bangladesh	7	508	17	892
Oman	-	-	14	859
Nepal	4	232	12	641
Saudi Arabia	-	-	8	619
Turkey	-	-	3	543
Jordan	-	-	6	287
Kenya	-	-	5	246
Other countries	18	1321	4	210

Table – 19 : Exports of Iron & Steel: Alloy Steel (Powder) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**5**	**3447**	**19**	**3711**
Korea, Rep. of	-	-	10	1379
Bangladesh	2	729	2	765
Nepal	-	-	5	759
Turkey	++	526	1	617
Singapore	-	-	++	109
Germany	-	-	1	57
China	-	-	++	18
Mexico	-	-	++	4
USA	++	68	++	3
Austria	++	13	-	-
Other countries	3	2111	++	++

Table – 20 : Exports of Iron & Steel (Scrap) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**11328**	**782088**	**6814**	**567051**
Sweden	1894	208796	2102	287086
Germany	40	11952	251	62426
Belgium	24	26160	76	53745
Singapore	560	3812	914	28838
Japan	-	-	100	15819
USA	222	7568	198	13219
Ukraine	96	3246	346	12231
Korea, Rep. of	298	2924	728	11796
Netherlands	39	3550	37	10708
Brazil	221	16019	109	9016
Other countries	7934	498061	1953	62167

Table–21 : Exports of Iron & Steel (Sponge iron) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**394254**	**6467171**	**588622**	**11054667**
Bangladesh	258420	3940148	278707	5606866
Bhutan	10953	142386	84887	1518248
Nepal	28522	500794	83068	1516092
Oman	-	-	51351	799177
Malaysia	4253	73051	30119	508311
Saudi Arabia	-	-	24605	423177
Indonesia	20777	346426	21976	360146
South Africa	1164	18384	6152	107029
USA	398	65069	437	68631
Madagascar	1763	23920	2581	53457
Other countries	68004	1356993	4739	93533

Table – 22 : Exports of Pig & Cast Iron (Including Spiegeleisen) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**489383**	**9618050**	**557634**	**12533400**
Thailand	148824	2780316	138066	2933353
Bangladesh	93970	1610931	84197	1782131
Chinese Taipei/Taiwan	103255	1811505	68268	1428299
Indonesia	45574	948606	41707	988090
USA	48477	1049806	26281	647843
Malaysia	6815	144123	26515	643325
Italy	961	23492	31500	642224
Pakistan	14312	318643	25596	627887
Turkey	70	2997	25048	512165
China	69	12014	24219	433665
Other countries	27056	915617	66237	1894418

Table - 23 : Imports of Iron & Steel (Total) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**14706046**	**725054176**	**15157470**	**868869916**
China	2803962	165820035	2991940	191911386
Korea, Rep. of	2276933	113265411	2940638	162629487
Japan	1289136	84807022	1325733	92227355
USA	923648	40229043	828479	45558984
UAE	833179	21163754	1035004	36754052
Germany	292428	34906118	263363	36275883
Vietnam	100978	7745103	286303	27809977
UK	859848	22359765	504087	19745714
Thailand	249063	19093274	199828	18633020
Chinese Taipei/Taiwan	246339	13024392	320115	18613384
Other countries	4830532	202640259	4461980	218710674

Table – 24 : Imports of Iron & Steel (Finished Steel Including CR Sheet) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**3765493**	**257185561**	**4164360**	**298309359**
China	1745395	87284757	1627141	97286705
Korea, Rep. of	687700	46568692	841954	59638098
Japan	550892	44308038	653052	49696211
USA	89027	9826655	111347	11759392
Germany	94376	11745628	99762	10846546
Vietnam	17876	1391651	162781	9311467
Russia	65218	6882465	75395	6628595
Belgium	78747	4898997	77427	4847607
Chinese Taipei/Taiwan	32410	2794648	45203	4800061
Italy	27694	4390988	33623	4070266
Other countries	376158	37093042	436675	39424411

Table – 25 : Imports of Iron & Steel (Steel Wire) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**246958**	**17576290**	**230451**	**19567606**
China	127484	7630203	102884	7862526
Japan	13492	2226601	10299	2288751
Korea, Rep. of	20761	1607030	27279	2121852
Malaysia	24724	1420804	25785	1654134
Nepal	21876	1087988	19833	1131389
France	5812	514267	6702	612281
Germany	950	454046	1352	575784
Vietnam	6961	459717	8192	572815
Thailand	6545	378738	8132	507980
Indonesia	4092	344710	4978	466169
Other countries	14261	1452186	15015	1773925

Table – 26 : Imports of Iron & Steel (Other Finished Steel, NES) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**618654**	**155314158**	**787026**	**192386777**
China	350670	47016088	495974	55756249
Germany	30483	15820454	40725	18519652
Japan	25238	15934987	26769	15491086
Korea, Rep. of	28554	9883765	36536	14987088
USA	12202	10821671	16138	12892564
Thailand	29561	9461828	30252	9229657
Vietnam	9407	1108398	7202	9045492
UAE	5414	1507566	5512	7164485
France	6572	3723024	9311	6775341
Italy	17151	6540545	16873	6338492
Other countries	103402	33495832	101734	36186671

Table – 27 : Imports of Iron & Steel (Semi-finished Steel Including Steel Ingots) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**3686644**	**126547223**	**3781928**	**153318568**
Korea, Rep. of	1273326	43757298	1746366	71443426
Japan	666935	21081861	597624	23473236
China	374132	11950837	453350	16559401
Indonesia	341379	8650043	213367	7074342
UAE	30815	959241	107301	3500810
Brazil	4739	232132	101260	3412257
France	137286	5709868	45872	2887450
Ukraine	106358	2979808	85353	2804378
Germany	59919	3426224	42604	2722842
Russia	226218	5742393	78167	2703662
Other countries	465537	22057518	310664	16736764

Table – 28 : Imports of Iron & Steel : Alloy Steel (Granules) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**18641**	**797026**	**21117**	**987971**
France	4355	191972	4847	237111
China	3870	137509	5646	201268
Spain	5481	231945	3537	178290
Germany	1204	65224	2769	156658
South Africa	1553	65995	2112	91007
Chinese Taipei/ Taiwan	700	25543	954	38462
Japan	274	22631	177	26287
USA	23	1829	117	10648
Korea, Rep. of	291	10348	236	9200
UK	282	14391	184	8371
Other countries	608	29639	538	30669

Table-29 : Imports of Iron & Steel : Alloy Steel (Powder) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**1681**	**347979**	**3028**	**464228**
UK	30	10898	257	146972
Sweden	560	48714	1036	89649
China	394	85148	648	71406
USA	207	48713	172	52230
Canada	261	18449	813	44036
Belgium	55	22762	53	24312
Japan	58	82412	7	10829
Singapore	4	12023	3	10171
Germany	12	6925	2	9314
Bosnia-Herzegovina	-	-	21	1573
Other countries	100	11935	16	3736

Table-30 : Imports of Iron & Steel (Scrap) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**5719949**	**137854665**	**5427661**	**165878997**
UAE	746078	17012214	845850	23336819
USA	810193	17684959	690893	19396398
UK	833256	15912479	471748	12044587
Malaysia	224786	7205326	224415	8896305
Netherlands	148340	5519880	95435	7406315
Singapore	228414	6147352	224174	7188580
Australia	204258	4026561	253824	6796190
Thailand	163378	6542206	113424	6269245
South Africa	285696	4999162	279289	5840338
Korea, Rep. of	91092	5080890	82424	5419957
Other countries	1984458	47723636	2146185	63284263

Table-31 : Imports of Iron & Steel (Sponge Iron) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**38136**	**560414**	**79329**	**1329360**
UAE	28151	433110	52611	986541
South Africa	7191	83841	20330	236970
Saudi Arabia	1759	18397	3733	54058
Iran	-	-	2522	44871
Bangladesh	-	-	102	6305
Thailand	-	-	26	374
China	-	-	4	217
USA	1	198	++	11
Japan	36	10842	1	8
Malaysia			++	5
Other countries	998	14026	++	++

Table-32 : Imports of Pig & Cast Iron (Incl. Speigeliesen) (By Countries)

Country	2016-17		2017-18	
	Qty (t)	Value (`'000)	Qty (t)	Value (`'000)
All Countries	**77264**	**4824785**	**64223**	**4325786**
China	7660	451567	10392	592948
Germany	1974	389127	1860	482600
Sweden	5102	352875	6222	424448
UK	790	241158	963	341690
Japan	473	314726	513	306659
Indonesia	24915	1482743	4940	301534
Russia	8866	204173	6525	245238
South Africa	3140	96312	6766	212344
Spain	7338	343727	3942	195547
Thailand	2119	117512	3910	189286
Other countries	14887	830865	18190	1033492

FUTURE OUTLOOK

Steel is one of the most important products of the modern world and of strategic importance to any industrial nation from construction, industrial machinery to consumer products; steel finds its way into a wide variety of applications. India was the 2nd largest producer of crude steel during the year 2018 and also one of the largest producer of sponge iron or DRI in the world. India was the 3rd largest finished steel consumer in the world after China & USA. As per NSP, 2017, Indian steel industry has an output multiplier effect of nearly 1.4X on GDP and employment multiplier factor of 6.8X.

There is significant potential for growth given the low per capita steel consumption of 65.2 kg (As per World Steel Association, 2017) in India, as compared to world average of 214.5 kg. The National Steel Policy aims at achieving per Capita Steel Consumption to 160 kgs by 2030-31, with an aim to domestically meet entire demand of high grade automotive steel, electrical steel, special steels and alloys for strategic applications.

Indian economy is rapidly growing with enormous focus on infrastructure and construction sector. Several initiatives mainly, affordable housing, expansion of railway networks, development of domestic shipbuilding industry, opening up of defence sector for private participation, and the anticipated growth in the automobile sector, are expected to create significant demand for steel in the country.

Further, while the main focus of the industry is on the domestic market, being in close vicinity of the developed west and developing east, provides it a strategic location that augurs well for the industry seeking opportunities for exports of finished goods and imports of some scarcely available raw materials.

As per NSP, 2017, it is expected that at the current rate of GDP growth i.e 7.5% (Average GDP growth rate of India was 7.5% during 2010 – 2015; World Bank), the steel demand will grow threefold in next 15 years to reach a demand of 230 MT by 2030-31. Demand for pig iron for merchant use, such as for castings and supplementary metallic in the electric arc or induction furnaces, is projected to increase to 17 MT by 2030-31. Similarly, demand for sponge iron is projected to increase to 80 MT by 2030-31. It is projected that the sponge iron capacity may increase to 114 MT by 2030-31 with around 30% share of gas based capacities under increased environmental considerations and long term availability of gas.

In this scenario, Indian Iron & Steel Industry will generate significant employment in the range of 36 Lakhs by 2030-31 from the current level of 25 Lakhs depending on degree of automation resulting from adoption of different technologies.